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First Lithium Chloride produced from Optimisation Plant

Start of production of lithium chloride from a local resource in Europe Important step for European battery supply chain security

Vulcan Energy Resources Limited (Vulcan, ASX: VUL, FSE: VUL, the Company) is pleased to announce the Start of Production (SOP) of the first Lithium Chloride (LiCl) product at Vulcan's Lithium Extraction Optimisation Plant (LEOP) in Landau, Germany.

Highlights

- First LiCl produced from LEOP, heralding the first lithium chemicals domestically produced from a local source in Europe, for Europe.
- LEOP is showing strong early results with consistently over 90% (up to 95%) lithium extraction efficiency from its Adsorption-type Direct Lithium Extraction (A-DLE) unit, replicating what Vulcan has seen in its lab and pilot plant operations, and in line with its commercial plant expectations and Vulcan's financing model.
- The SOP follows over three years and more than 10,000 hours of successful in-house A-DLE piloting by Vulcan, showing high lithium recoveries and thousands of cycles of adsorbent life with no material degradation.
- Representing a more than €40m investment by Vulcan, LEOP is an optimisation, operational training and product qualification testing facility, to enable operational readiness for when the Phase One commercial facility is completed.
- Once Phase One commercial production commences, it is estimated that Vulcan's integrated renewable energy and ZERO CARBON LITHIUM™ business will produce enough lithium for approximately 500,000 EVs.
- Vulcan has proven that the sustainable lithium production process known as A-DLE, which accounts for 10% of global lithium production today, can be successfully applied in the Upper Rhine Valley Brine Field.
- The Upper Rhine Valley Brine Field in Europe contains Europe's largest lithium resource and is also a source of geothermal renewable heat. This will allow Vulcan to produce its lithium using geothermal renewable energy, decarbonising the carbon footprint of lithium production for Battery Electric Vehicles.

MD and CEO Cris Moreno stated, "This significant milestone marks a pivotal moment in Vulcan's journey towards revolutionising domestic lithium raw material supply for Europe's Battery industry. Vulcan's LEOP facility is equipped with world-leading technology designed to showcase the efficiency of our A-DLE process and environmental benefits, whilst training our commercial production team in a pre-commercial environment as we build the Phase One commercial plant. It is encouraging to see LEOP deliver extraction efficiency in line with our expectations. I would like to thank our determined project execution and operations team for getting us to this landmark. We look forward to providing further updates on our Central Lithium Electrolysis Optimisation Plant (CLEOP) as we aim to produce Europe's first fully integrated lithium battery chemicals from our own domestic resource, and also to providing updates on Phase One of the Zero Carbon Lithium™ Project, including financing, in the coming months."

Next steps

The LiCl produced by LEOP represents the first lithium chemicals fully produced from a locally sourced raw material, i.e. extracted and then processed locally, at this plant scale in Europe. During hot commissioning and startup of LEOP, a generic aluminate-based lithium adsorbent was used, that has been used before in Vulcan's lab and pilot plants. Vulcan's internally developed high-performance aluminate-based lithium adsorbent, VULSORB®, will be used for the long-term operation. The next step will be conversion to a battery-grade lithium chemical in Vulcan's downstream optimisation plant. The LiCl product (40% weight solution) produced from LEOP will be transported to Höchst Industrial Park Frankfurt, where Vulcan is currently completing its CLEOP which will convert the LiCl into battery grade Lithium Hydroxide Monohydrate (LHM).

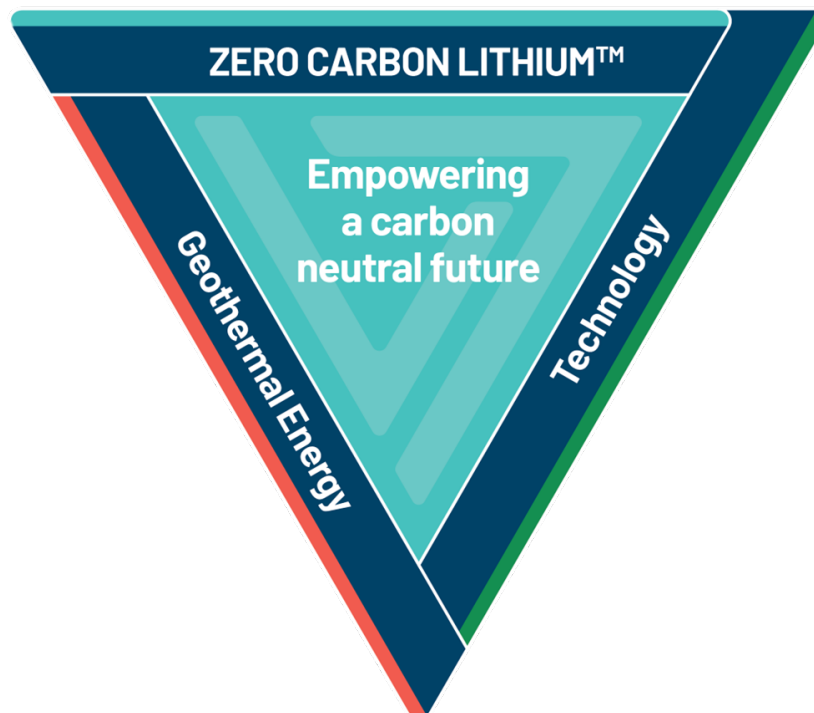
Once CLEOP is in operation, which is expected in mid-2024, Vulcan will have produced the first fully integrated lithium battery chemicals in Europe, including conversion to a battery-grade chemical, with the co-production of renewable energy and heat. These optimisation plants are comparable to Vulcan's Phase One, commercial plants, with similar process flowsheets, with the commercial project aiming for 24,000 tonnes per annum of lithium hydroxide production capacity, the financing process of which is currently being led by BNP Paribas.





About Vulcan

Founded in 2018, Vulcan's purpose is to empower a carbon neutral future, through the co-production of lithium, heat and renewable energy from geothermal brine. Vulcan is focused on delivering the world's first integrated renewable energy and ZERO CARBON LITHIUM™ Project. By adapting existing technologies to efficiently extract lithium from geothermal brine, Vulcan aims to deliver a local source of sustainable lithium for Europe, built around a carbon neutral strategy with exclusion of fossil fuels. Already an operational renewable energy producer, Vulcan will also provide renewable electricity and heat to local communities. Vulcan's combined geothermal energy and lithium resource is the largest in Europe¹, with licence areas focused on the Upper Rhine Valley, Germany. Strategically placed in the heart of the European electric vehicle market to decarbonise the supply chain, Vulcan is rapidly advancing the ZERO CARBON LITHIUM™ Project to target timely market entry, with the ability to expand to meet the unprecedented demand that is building in the European markets. Guided by our Values of **Climate Champion, Determined and Inspiring**, and united by a passion for the environment and leveraging scientific solutions, Vulcan has a unique, world-leading scientific and commercial team in the fields of lithium chemicals and geothermal renewable energy. Vulcan is committed to partnering with organisations that share its decarbonisation ambitions and has binding lithium offtake agreements with some of the largest cathode, battery, and automakers in the world. As a motivated disruptor, Vulcan aims to leverage its multidisciplinary expert team, leading geothermal technology and position in the European EV supply chain to be a global leader in producing carbon neutral lithium. Vulcan aims to be the largest, most preferred, strategic supplier of lithium chemicals and renewable power and heating from Europe, for Europe; to empower a carbon neutral future.



¹ According to public, JORC-compliant data. See Upgrade of Zero Carbon Lithium™ Project Resources, 29 September 2023

Corporate Directory

Executive Chair	Dr. Francis Wedin
Managing Director and CEO	Cris Moreno
Deputy Chair	Gavin Rezos
Non-Executive Director	Ranya Alkadamani
Non-Executive Director	Annie Liu
Non-Executive Director	Dr. Heidi Grön
Non-Executive Director	Josephine Bush
Non-Executive Director	Dr. Günter Hilken
Chief Representative GER	Dr. Horst Kreuter
Group Chief Financial Officer	Felicity Gooding
Company Secretary	Daniel Tydde

For and on behalf of the Board

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Reporting calendar

29 April 2024	March Quarterly
29 July 2024	June Quarterly
12 September 2024	Half Year Report
29 October 2024	September Quarterly

Disclaimer

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Vulcan has carried out a definitive feasibility study ("DFS") and bridging engineering study ("Bridging Study") for Phase One of its Zero Carbon Lithium™ Project ("Project"), the results of which were announced to the ASX in the announcements "Zero Carbon Lithium Project Phase 1 DFS Results" dated 13 February 2023 ("DFS Announcement") and "Positive Zero Carbon Lithium™ Project Bridging Study Results" on 16 November 2023 ("Bridging Study Announcement"). This announcement may include certain information relating to the DFS and the Bridging Study. The DFS and Bridging Study are based on the material assumptions and parameters outlined in their respective announcements. While Vulcan considers all of the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the Bridging Study or DFS will be achieved. This presentation may also include certain information relating to Phase 2 of its Project, Vulcan has not yet carried out a definitive feasibility study for Phase Two of its Project.

Competent Person Statement

The information in this announcement that relates to estimates of Mineral Resources and Ore Reserves is extracted from the Bridging Study Announcement which is available to view on Vulcan's website at www.v-er.eu. Vulcan confirms, that in respect of the estimates of Mineral Resources and Ore Reserves included in this announcement:

- a) it is not aware of any new information or data that materially affects the information included in the original market announcement, and that all material assumptions and technical parameters underpinning the estimates in the original market announcement continue to apply and have not materially changed;
- b) the form and context in which the Competent Persons' findings are presented in this announcement have not been materially modified from the original market announcement; and
- c) all material assumptions underpinning the production targets (and the forecast financial information derived from such production targets) included in this announcement continue to apply and have not materially changed.